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in the Transactions of the South African Philosophical Society **16**: 267-300. 1906."

The Transvaal is an inland province on the east side of South Africa, about two hundred miles in extent each way. At the north it overlaps the Tropic of Capricorn upwards of fifty miles, so that a tropical or semitropical climate would be expected, and for the most part the names of the ferns are in accord with this assumption.

It is not, therefore, very surprising to meet the names of species known to occur almost everywhere in the tropics. Such are *Ophioglossum reticulatum* L., *Aspidium molle* Desv. [Sw.], *Adiantum caudatum* L., *A. capillus-veneris* L., *Pteris longifolia* L., *P. cretica* L., and *Osmunda regalis* L.

But when we find that the list includes species otherwise north temperate, or strictly American, the explanation of so anomalous a distribution appears impossible. In this class are *Ophioglossum vulgatum* L., *Nephrodium thelypteris* Desv. [Strempel], *N. filix-mas* Rich., *Asplenium adiantum-nigrum* L., *Polypodium vulgare* L., *P. incanum* Sw. [= *P. polypodioides* (L.) Hitch.], *Lycopodium clavatum* L., *L. carolinianum* L., and *Selaginella rupestris* Spring.

It may be possible to explain the riddle as partly due to incorrect identification, but not for all. Concerning a few species, there is no question as to the identity.

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A fern collector in Florida

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It was my pleasure to spend the time from February 15th to April 15th, 1910, in southern Florida. About half of this time I put in on the west coast, in the Manatee country, and the balance at Miami and Palm Beach, on the east side of the state. From the latter

place I made trips into the Everglades and along the line of the Florida Keys

Commencing our search at Bradentown, on the Manatee River, we readily find *Dryopteris patens* (Sw.) Ktze., *D. unita* (L.) Ktze., *Woodwardia areolata* (L.) Moore, *Pteridium aquilinum caudatum* (L.) Kuhn, and *Acrostichum excelsum* Maxon. The last is a giant among ferns, growing mostly in salt or brackish marshes, and so has been called the salt marsh fern. I found stalks of last year's growth nine feet high, with stipes as thick as a man's finger, and single pinnæ a foot long, often thirty pairs of them on a single frond, and very much crowded, with the sporangia covering the entire back of the frond and sometimes on the front also

Woodwardia is abundant but does not fruit till later. *Pteridium aquilinum caudatum* abounds everywhere, and is so well marked that it would deserve specific rank did it not grade insensibly into the typical form farther north. I measured old stalks eight feet high, but in dry places it is mostly under two feet.

In the hammocks and growing on the trunks and large horizontal limbs of oaks, often covering them entirely, is the pretty *Polypodium polypodioides* (L.) Hitch. This flourishes in the rainy season and then dries and shrivels up, like the resurrection plant, and can remain in this condition indefinitely, but revives again with the first moisture. I brought some home that had been dried up for months, but they became bright green, erect and vigorous an hour after being placed in water.

Blechnum serrulatum L. C. Richard, a large, distinctly marked fern, with many long, entire and close-veined pinnæ, I found abundant in all moist places. The common sword fern, *Nephrolepis exaltata* (L.) Schott, so frequent in cultivation, I found here in only two places, but it is most abundant on the east coast. *Phlebodium aureum* (L.) R. Br., a peculiar-looking, large, broad, and

coarsely divided fern, I found both on the ground and on the trunks of palms. I found also *Campyloneuron phyllitidis* (L.) Presl, often called hart's tongue, though very unlike the one found in central New York. It has erect, rigid, undivided leaves, from 2 to 3 feet high and 1 to 4 inches broad. From my experience, I judge it is rare.

The only ferns I saw in Florida that I find in eastern New York are the cinnamon, marsh, and royal ferns. The above complete my list from this locality, except for two or three that I have not identified from the young sterile fronds. A few others are there and could be found later in the season.

On the east coast, near Miami, I found all those mentioned except *Campyloneuron phyllitidis* (L.) Presl, and in abundance four new ones. One of these, *Pteris longifolia* L., has fronds narrower than those of the sword fern. Another *Pteris*, *P. cretica* L., is silvery in color, with extremely narrow, stiff, wiry pinnae, but retains the shape and horizontal spread of *Pteridium aquilinum*. *Anemia adiantifolia* (L.) Sw., a most beautiful fern of small to medium size, grows on dry coral rock, and has the two lower pinnae fruiting and lengthened above all the others. I found here *Vittaria lineata* (L.) Sm., the grass fern, the strangest and least fernlike-looking of all. The fronds are about $\frac{1}{8}$ inch wide and from 15 to 36 inches long, as I know, though Underwood says 6 to 18 inches. I found them on trunks of the palmetto only, and sometimes 200 or 300 of the grasslike fronds in a clump. Had I not known of their existence, I would not have collected them for ferns.

Back of Miami, near the Alligator Farm, are acres of *Nephrolepis exaltata* (L.) Schott. The plants are mixed with *Blechnum serrulatum* L. C. Richard and *Pteris cretica* L., and all grow from the ground and none on the palms. At Palm Beach, where they are plentiful, none grow on

the ground but all are high up on tall palmettos. In many places there are dozens of plants to a tree, a circle of them under the fronds of the palm.

The Florida Keys seem unsuited to fern life. I found nothing new and very few indeed of any kind of ferns.

Collecting in Florida has its unpleasant features. Many of its thickets and jungles are almost impenetrable, and it has five species of poisonous snakes which grow very large. On former trips for birds, mammals, and reptiles, I have met many of them.

The small black mosquitoes of the Everglade section bite without the warning song and inject five times the venom that the New Jersey mosquito does. Then there are ticks, chigres, and red bugs, all with a wild desire to get into your flesh.

The first is likely to locate in your back hair, and is half buried before you feel him. He is tougher than leather, and it needs a yoke of oxen to pull him out, and then his head and jaws are left in the flesh.

The red bugs are worst of all, and so small as to be scarcely visible to the naked eye. They do not exactly burrow but so poison and irritate the flesh that it swells up from both sides and covers them, and the man who never learned to scratch before, will acquire the knack at once. They get mostly on the ankles or below the knees, and after April 1st it is safer and wiser, after every trip through grass or bushes for specimens, to bathe in sal soda solution as strong as it can be made.

Such things annoy one at the time, but are a source of amusement afterwards, and we always feel the desire of making the journey again even if we have the same experience.

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